Government of India
Ministry of Earth Sciences

Press Release

Winter Fog Campaign 2015-16.

Fog is a visible mass consisting of cloud water droplets suspended in the air or near the Earth's surface. It can be considered as a type of low level cloud. Fog affects various activities like aviation, public transport, shipping, agriculture etc. In India, Fog is predominantly observed during the winter months (December-February), especially over northern parts of the country. Maximum fog events occur over Northwest India where on an average 48 (visibility < 1000m) events are observed. During the past 10-15 years, there has been an increase in frequency and intensity of fog occurrence over northern parts of the country. Land use changes and increasing pollution in the region are responsible for growing fog occurrence.

Since fog has large impacts on various sectors, especially on aviation, it is necessary to understand the physical characteristics, factors responsible for genesis and intensity and ultimately develop reliable models for predicting different characteristics of fog. For aviation sector, it is necessary to know whether a fog event will occur during next 24 hours, if so what could be intensity, when it will start and when it will dissipate or duration of fog. Even though fog forecasts issued by the India Meteorological Department are found useful, there is a large scope for further improvement in skill and also to develop models for predicting characteristics of Fog, like intensity and duration. Model improvement needs better understanding of the event, i.e., fog. Therefore, the Ministry of Earth Sciences (MoES) has taken up an initiative to conduct an observational campaign to understand different physical features of fog and factors responsible for genesis, intensity and duration.

For the first time, Indian Institute of Tropical Meteorology (IITM) Pune and India Meteorological Department (IMD), Ministry of Earth Sciences, are jointly conducting an observational campaign at the Indira Gandhi International Airport (IGIA) and at ICAR institute at Pusa during this winter season (2015-16). This year's campaign will be done on a pilot mode, which will be repeated during next 2-3 winter seasons. The main objective of the proposed field campaign is to study the characteristics and variability of Fog events over Delhi and associated dynamics and thermodynamics and cloud

microphysics. These observations will ultimately improve our understanding of Fog events and our capability in prediction.

The observational campaign will include simultaneous measurements of surface meteorological conditions, radiation balance, turbulence, thermo-dynamical structure of the surface layer, droplet and aerosols microphysics, aerosol, fog water chemistry, vertical profile of winds, temperature and humidity to describe the complete environment in which fog develops. These measurements will form the basis for understanding the some of the key questions on fog formation and dispersion. With these measurements, modeling efforts also will be made with the ultimate aim to improve the prediction skill.

For this observational campaign, Airport Authority of India and GMR, Indira Gandhi International Airport have extended their full cooperation and support. In addition to IITM and IMD, the Indian Air force (IAF), Indian Council for Agricultural Research (ICAR) and Indian Institute of Science Education and Research(IISER) Mohali are also participating in the observational campaign. For modeling efforts, IITM Pune, NCMRWF Noida and IIT Delhi are also involved.

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